

## STONE ARTIFACTS OF NON-TASMANOID FACIES FOUND, OR OBTAINED, IN TASMANIA

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PLATES XII-XVIII, THREE TEXT-FIGS

### ABSTRACT

It is generally agreed that the Tasmanian aboriginal did not, as a normal part of his lithic culture, grind his implements. Seven ground artifacts found, or obtained, in Tasmania, of which one only has previously been noted in the literature, are here described and figured: and published records of several ground implements stated to be of Tasmanian origin are enumerated. A chipped spearhead from near Mount Gambier, South Australia, found in a Launceston garden, is incidentally noted. The possible significance of the ground artifacts here described is briefly discussed.

There are in the collection of the Queen Victoria Museum, Launceston, six ground stone aboriginal artifacts stated to have been found, or obtained, in Tasmania: a seventh example (specimen G) has kindly been loaned, for record here, by Mr H. Stuart Dove, of Devonport. A notice of one of these implements (specimen E) has already appeared in the literature (Skinner, 1936).

Of the six Museum specimens, two were presented during the last century, one (specimen A) being stated to have been obtained from aborigines of the Surrey and Hampshire Hills District, the other (specimen B) being found at St Leonard's near Launceston: the remainder have been donated during the last twenty years.

One example (specimen F) was found about three feet six inches below the surface: the rest were obtained either at lesser depths (specimen F being found in a gravel pit, which was being worked at the time at a depth of about three feet) or on the surface.

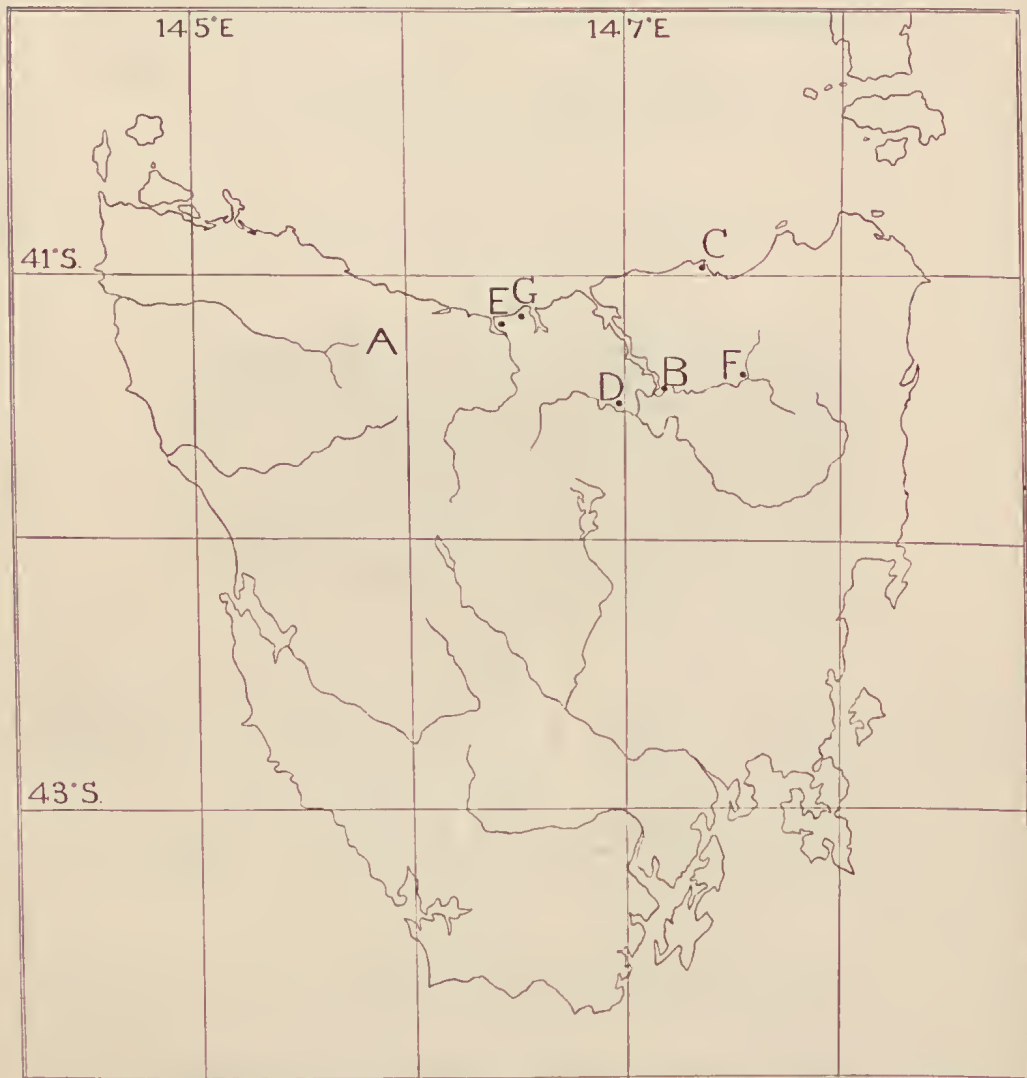
The present paper provides a description and figure of each of these interesting implements, together with an account of the circumstances of discovery so far as these are known. Specimens are dealt with in chronological order of receipt by the Museum. Published accounts of ground artifacts recorded from Tasmania are summarized.

A record of a chipped spearhead (Major R. E. Smith's specimen), known to have come from near Mount Gambier, South Australia, that was found in a garden at Trevallyn, Launceston, is included.

The possible significance of the finding, or securing, of ground stone implements in Tasmania is briefly discussed.

## DISTRIBUTION

Localities are shown in the accompanying map (Text-fig. 1): the reference-letters A-G are those by which the several implements are designated in the text.



Text-Fig. 1. Sketch map of Tasmania, showing distribution of ground stone implements described in this paper. Reference letters A-G are those by which the specimens are designated in the text. In the case of specimen A, stated to have been obtained from the aborigines by Dr J. Milligan, the locality can be indicated only approximately: in the case of specimens B-G the site of discovery is marked by a dot.

It will be noted that all the specimens come from the northern portion of the Island. The extent to which this restricted distribution is to be regarded as an intrinsic factor in the problem of the origin of the artifacts, and the degree to which it may be correlated with the geographical location of this Institution are matters of conjecture.

### LOCALITIES IN RELATION TO TRIBAL TERRITORIES

The association of these localities with particular tribes is a matter of some difficulty. Walker (1898, p. 178) observes 'Of the tribal organisations of the aborigines practically nothing is known, and the limits of the tribal divisions cannot be laid down with any approach to certainty. G. A. Robinson and other writers use the word "tribe" with a good deal of laxity. Sometimes it is used to designate a small sub-tribe, living in one community—*e.g.*, the Macquarie Harbour tribe, numbering 30 souls only—sometimes to indicate a whole group—*e.g.*, the Oyster Bay and Big River Tribes, which included several sub-tribes and a considerable population. As the whole group in some cases took its name from a prominent sub-tribe (*e.g.*, Oyster Bay), it is often doubtful whether the group or the sub-tribe is intended'. Milligan, in making an estimate of the total aboriginal population, took as a conjectural basis about twenty tribes and sub-tribes. Robinson (1838) in a speech made in Sydney, shortly after he had left Flinders Island, stated 'he had necessarily learnt four languages to make himself understood by the natives generally. But, as regarded nations, he could truly say that the island was divided, and subdivided by the natives into districts, and contained many nations'. In 1830 he stated he had been in communication with sixteen 'tribes'.

A further complication is introduced by seasonal, and perhaps other, migrations. It is well known that some of the tribes were in the habit of visiting the coast in winter, it is said between June and October: some tribes may not have had access to the sea, and some may have lived on the coast almost constantly. 'Knopwood says that he had understood that the natives cross the country from east to west in the month of March; this would apply to the East Coast tribes only' (Walker, p. 178). Backhouse (1843, p. 58) observes 'Parties of Aborigines resort hither [Macquarie Harbour] at certain seasons', and adds 'they cross the mouth of the harbour on floats', which he describes, noting they usually carried three or four persons. In the course of an account of the pursuit by Robinson of the natives of the Big River Tribe, who had speared Captain B. B. Thomas and James Parker, near Northdown, in 1831, West (1852, p. 61) makes the following interesting observation, 'They had been to a spot twenty miles south-east of the Van Diemen's Land Company's establishment, where they were accustomed to resort for a mineral, which is found in a decomposed bed of felspar'. Bonwick (1870, p. 44) says 'In 1828 three mobs or tribes—the Oyster Bay, the Stony Creek, and the Swanport—went against the Port Dalrymple on the north. There were two motives for war—to repel a trespass upon the hunting grounds of the Swanport tribe, and to obtain by force of arms a fresh supply of wives, they having lost many of their own through being too near the settlers'.

In connexion with tribal domains, Backhouse (1843, p. 104) states, 'Each tribe keeps much to its own district—a circumstance that may in some measure account for the variety of dialects. The tribes called by the settlers, the Ben Lomond tribe, occupied the north-east portion of Van Diemen's Land; that called, the Oyster Bay tribe, the south-east; the Stony Creek tribe, the middle portion of the country; and the Western tribe, the west coast. Besides these, there were also a few smaller sections'. West (1852, p. 81) says, 'Their tribes were distinct:

they were known as the Oyster Bay, the Big River, the Stony Creek, and the Western. There were smaller sub-divisions, but those enumerated were divided by dialects and well-established boundaries'.

Walker, who provides by far the best account of the subject, recognises four main groups as follows. Group 1: *Southern Tribes*. Group 2: *Western Tribes* (the 'North-West and Western Tribes' of Milligan (1859) in his vocabulary). Group 3: *Central Tribes*; with subdivisions (a) Oyster Bay Tribe, (b) Big River Tribe. Group 4: *Northern and North Eastern Tribes*; with subdivisions (a) Stony Creek Tribe, (b) Port Dalrymple Tribe, (c) Ben Lomond Tribe, (d) North-East Coast Tribe. It is, however, impracticable, save at considerable length, satisfactorily to review the tribal boundaries and relationships as set out by Walker, and to take account of the difficulties and anomalies encountered in any attempt at precise delimitation of territories: to secure a just idea of what our available knowledge amounts to the paper itself should be consulted. These four main groups, however, are probably co-extensive with the four main 'languages' noted by Robinson; and Walker himself identifies his first three groups with those specified by Milligan (1859) in his vocabulary.

Adopting Walker's analysis, and making necessary allowance in some instances for the uncertainty of our data, we find that the probable associations of sites of discovery of the ground implements here described with the normal tribal territories are as follows.

Specimen A (Milligan. 'Aborigines who frequented Surrey and Hampshire Hill [s], North West Tasmania'). Probably group 2. Walker's heading reads simply 'Western Tribes': in his text he deals first with natives along the south-western and western coast from South West Cape to Cape Grim, at the north-western corner of the Island; and later observes 'There were tribes at Circular Head and at Emu Bay. Most of the hinterland was covered with dense, almost impenetrable, forest, but the high downs of the Hampshire and Surrey Hills and Middlesex Plains were favourite resorts. Other patches of open country at intervals would probably afford to these tribes the means of inland communication with their kinsmen on the west, as well as the more circuitous route by the coast. These open spaces were formerly more numerous, being kept clear by burning. Many of them have become overgrown with timber since the removal of the natives.

'Hobbs (Boat Voyage, 1824) says that the natives travelled along the coast between Circular Head and Port Sorell, keeping the country burnt for that purpose. This group of tribes may possibly have extended as far east as Port Sorell, though the Port Sorell blacks were more probably connected with the Port Dalrymple tribe'.

West's statement that natives of the Big River Tribe (whose headquarters lay far to the south) were accustomed to resort, 'for a mineral', to a spot twenty miles south-east of the Van Diemen's Land Company's establishment has already been noted.

The question of the relationship between tribes along the North West Coast region and those of the West Coast proper, which unfortunately remains somewhat obscure, is of special interest in view of the contention by Wunderly (1938a, 1939) that Australian full-bloods and Tasmanian-Australian mixed-bloods were included in the 'West Coast Tribe'.

Specimen B (Groom: St Leonards). Probably group 4 (b).

Specimen C (Jessop: East Sandy Point, near Bridport). Probably group 4 (d).

Specimen D (McCulloch: *Springlands*, near Hadsphen). Probably group 4 (b). It is possible that group 4 (a) may at times have come as far north as this.



Specimen E (Willes: East Devonport). Either group 1 or group 4 (*b*). Speaking of the latter, Walker says 'The tribes as far as Port Sorell, and even as far as the Mersey, may have belonged to this group. But there is no evidence to show how far to the eastward the North-Western group of tribes extended. Possibly, the boundary may be placed in the forest country on the west bank of the Mersey. But it is uncertain to which group the Mersey and Port Sorell natives belonged'. There is evidence that, upon occasion, the tribe, or members of the tribe, of group 3 (*b*), with headquarters something like a hundred miles to the southward, visited the country round Northdown, which lies only a few miles eastward of Devonport.

Specimen F (Brigdborn: Wattle Corner, near Upper Blessington). Probably in the territory of group 4 (*c*), though perhaps on the borders of either group 4 (*b*) or group 4 (*a*).

Specimen G (Dove: Northdown, near East Devonport). See remarks on Specimen E.

### GENERAL ACCOUNT OF MATERIAL

*Conventions.* Throughout *linear dimensions* are recorded in millimetres: save in one or two cases, where ambiguity might arise, the name of, or an abbreviation for, the unit is omitted, for typographical clarity and economy, from measurements cited in the body of the paper. The end of the implement carrying the (primary) cutting edge is termed *proximal*; the end remote from the (primary) functional edge, *distal*. The *tip* is the most advanced point on the cutting edge. Let the artifact lie freely on a plane surface, first on one main face, then on the other, in each case noting vertical height above the plane of the midpoint of the cutting edge: the face that, when thus directed downwards, is associated with the lesser value for the altitude of the specified point is here termed the *obverse*; the other face, the *reverse*. *Right margin* and *left margin* are, respectively, the right and left sides of artifact when it lies on table on its obverse face with the tip directed towards the observer. (*Right margin* and *left margin* are thus invariable terms: hence, with implement on reverse face, tip towards observer, the margin towards observer's right hand is the *left margin*.) *Length-breadth index* = breadth/length  $\times 100$  (Tindale, 1937, *b*).

#### SPECIMEN A

#### (PLATE XII)

*General Description.* An elongate ellipsoidal hand axe, with length-breadth index 52.5: maximum breadth occurring at 60% of the length (from tip); maximum thickness, which is 54% of maximum breadth, at 83% of length. Both faces flattish; unpolished areas decidedly rough. Side elevation approximately an equilateral triangle, about three and a half times as long as wide: truncate rounded in about its distal one-twelfth. Polished roughly parallel with cutting edge to a depth of 10-15. On obverse, the limit of continuous polishing lies 35 behind tip, but isolated small polished patches extend back an additional 13 (perhaps a little further; details obscured by pasted label): on reverse, continuous polishing, running back as narrow lateral, but not quite marginal, spur along ridge on right side, extends 50 behind tip, isolated patches carrying discontinuous polishing a further 15 back. The cutting edge represents, very nearly,  $\frac{2}{3}$  of the circumference of a circle of radius 24.

*Registration Number.* Q.V.M. Reg. No. 1230.

*Dimensions.* Length 112.8. Breadth: maximum 59.2, at 68 behind tip; at middle of length 58.5. Thickness: maximum 32.2, at 94 behind tip; at middle of length 27.0. Maximum girth 120, at 65 behind tip. With implement on plane surface: lying on obverse, maximum height 34.7, height of midpoint of cutting edge 5.7; on reverse, 35.0, 7.4, respectively. Weight 300.66 gm. Specific gravity 3.39 gm per cc.

*Material.* I am indebted to Mr Q. J. Henderson, Field Geologist, Department of Mines, Tasmania, for observations on the material of this and other specimens. Regarding the present specimen, Mr Henderson remarks (*in litt.*, 31/5/'41), 'This is a typical quartzite with no distinctive characteristics to point to a particular locality'.

The specific gravity of this specimen is higher than that of any other implement in the present series.

The question of the relative densities of various rocks commonly used by the Tasmanian aborigines for their implements has been studied in some detail by Noetling (1910), from whose paper the following tabular summary is quoted.

Hornstone	2.500-2.847: av. 2.687
Porcellanite	2.308-2.700: av. 2.498
Breccia	2.540-2.782: av. 2.636
Others	1.940-2.680: av. 2.472

*Locality.* Surrey and Hampshire Hills district, North West Tasmania: stated to have been obtained from the aborigines. The Surrey Hills block (150,000 acres) and Hampshire Hills block (10,000 acres) formed part of the original Van Diemen's Land Company concession granted during the governorship of Col. George Arthur, 1824-1836 (Bischoff, 1832; Meston, 1929, map on p. 273).

*History.* Pasted on the obverse face of the implement is a much-yellowed label (probably affixed at the time of presentation), with inscription (in unknown handwriting): 'Stone hatchet presented to the Mechanics Institute Museum Launceston by A. M. Milligan 17/6/'82, whose brother Dr Milligan obtained it from Aborigines who frequented Surrey and Hampshire Hill [*sic*] North West Tasmania'. The present Museum label (in the handwriting of the late H. H. Scott, Curator, 1897-1938) reads (printed headings here in italics): '*Name*—Partly polished Celt of Victorian origin. *History*—Obtained, by the donor, [= donor's brother] from the Tasmanian Natives. *Donor*—Mr A. W. [= A. M.] Milligan'.

The Dr Milligan here referred to would be Joseph Milligan, born in Dumfriesshire, 1807: from 1830 for 10-12 years Surgeon to the Van Diemen's Land Company at Surrey Hills: 1843-1855 (excluding 1846-47, when he proceeded to Macquarie Harbour in charge of a large party of convicts) Superintendent of the Aborigines: 1860 left Tasmania for England (did not return): 1884 died in London: member of the Tasmanian Society and an original member of the Royal Society of Tasmania, of which latter he was Secretary 1848-1860: author of two important accounts (1859 *a* and *b*) of the language and dialects of the aborigines, and of about a dozen other papers in the journals of the two local scientific societies mentioned above. See Royal Society obituary notice (1885, p. 12), Piesse (1931, p. 50 footnote; *passim*), Maiden (1910, p. 22).

This is the Dr Milligan through whose hands A. G. Robinson's three ground implements said to have come from Tasmania passed to J. Barnard Davis (see section on published records of ground artefacts recorded from Tasmania, below).

Through the courtesy of Mr J. R. Forward, Librarian and Secretary, Launceston Public Library (founded in 1842 as Launceston Mechanics' Institute, present name adopted in 1929), I have been permitted to examine the records of that

institution. In the minutes of the Monthly Committee Meeting, 27th June, 1882, appears the entry: 'Stone Hatchet of the Aborigines presented by Mr. A. M. Milligan, thankfully received'. The donation is also recorded ('Mr. A. M. Milligan, aboriginal stone hatchet') in the list of accessions for 1882 given in the Annual Report presented at the Annual Meeting, 18th January, 1883 (the minute book record takes the form of a pasted-in cutting from *The Examiner*, Launceston, of 19th January, 1883). A separate minute book of the Museum sub-committee simply records, at meeting of 15th November, 1882, 'List of presents since the Annual Meeting read'. The Mechanics' Institute Museum had been founded in 1879 (though it appears collections had been housed in a room in the Public Buildings a dozen years earlier). On the establishment of the Queen Victoria Museum and Art Gallery (foundation stone laid January, 1887; officially opened 29th April, 1891: the original title did not include *Queen*), the collections of the Mechanics' Institute Museum were handed over to the new institution.

*Remarks.* Milligan's presentation to J. Barnard Davis of a fire-drill, labelled as Tasmanian, and of three ground implements said to have come from Tasmania has called forth some strong remarks on his alleged carelessness in ethnological matters from Walker (1900) and from Ling Roth (1899)—see below, in discussion of earlier records of ground implements from Tasmania. To what extent the criticism is justified it is difficult, at this stage, to judge. On the one hand, it is not at all unlikely that earlier observers may well have been inclined to attach less importance to precision in matters relating to provenance than is to-day deemed desirable: on the other hand, to dismiss exceptional records by discrediting the reliability of first-hand testimony is a proceeding perhaps more facile than wholly satisfactory.

Both in material and workmanship the present artifact exhibits considerable superficial resemblance to several specimens in our collections from Victoria and New South Wales.

#### SPECIMEN B

#### (PLATE XIII)

*General Description.* A sub-elliptical axe, with length-breadth index 77: maximum breadth occurring at 53% of the length (from tip); maximum thickness, which is 23% of maximum breadth, at 64% of length. General form lenticular. Obverse slightly convex longitudinally, a little more convex transversely: reverse about as convex longitudinally as obverse transversely. Apart from (a) on obverse two irregular areas (left, distal), about  $30 \times 5$  and  $18 \times 10$ ; (b) on reverse an irregular area (right, distal, oblique) about  $10\text{--}12 \times 53$ , a subconchoidal area (left, distal) about  $18 \times 10$ , and a (?) chip (right, mesial) about  $18 \times 13$ , all of which regions are marginal, virtually the whole of the both faces is smooth: a few small additional unground marginal regions may represent chipping after manufacture. The general outline (disregarding adventitious notches) of the somewhat asymmetrical cutting edge, back to the level at which sharp edge ceases on left (namely, 21 behind tip: on right, edge is sharp to about 40 behind tip) may be reproduced approximately (plot middle are first) from the following data: three arcs, left, middle, right, whose projections on a chord 86.0 long, drawn parallel to, and 21.0 behind, tangent to midpoint of cutting edge, are 26.0, 32.5, 27.5, respectively, are portions of circles of radius 36.0, 95.0, 29.0, respectively.

*Registration Number.* Q.V.M. Reg. No. 1259.



*Dimensions.* Length 126.0. Breadth: maximum 97.2, at 53 behind tip; at middle of length 94.8. Thickness: maximum 22.6, at 81 behind tip; at middle of length 21.0. Maximum girth 209, at 58 behind tip. With implement on plane surface: lying on obverse, maximum height 24.1, height of midpoint of cutting edge 8.8; on reverse, 24.5, 10.6, respectively. Weight 435.70 gm. Specific gravity 3.11 gm per cc.

*Material.* As the result of a petrological examination, Mr Q. J. Henderson states 'This is a gneissose gabbro-amphibolite. The rock appears holocrystalline, the pyroxene enclosing idiomorphic labradorite. Incipient uralitization of the pyroxene can be observed, while the feldspars are partly saussuritised.

'A similar type of rock is known to occur at Anderson's Creek in the Beaconsfield district.'

*Locality.* Found at St Leonards, Northern Tasmania. St Leonards is a village of some 250-300 inhabitants, about four miles south-easterly from Launceston.

*History.* Pasted on the reverse is a typewritten label (obviously old, lettering almost faded out; probably attached on receipt of the specimen), reading: 'Stone Axe, Found at St Leonards by Mr Cuthbert Wilkinson. Origin Doubtful. Donated by Miss Groom August 1895'. The present Museum label, in the handwriting of the late H. H. Scott, reads: '*Name*—Polished Axe. *History*—Found at St Leonards, Tasmania, by Mr Cuthbert Wilkinson. (Possibly of New Zealand origin). *Donor*—Miss Groom. August 1895'. No other information regarding history is available.

This specimen, together with specimen E, was exhibited at a meeting of the Royal Society of Tasmania, Northern Branch, in Launceston, on 30th September, 1935.

*Remarks.* A pencilled note, in the handwriting of H. H. Scott, notes that a well-known Australian anthropologist has observed, concerning this implement, 'Probably New Zealand'.

The specimen exhibits some indications of having been water-worn, probably prior to its having been fashioned.

An inspection of the illustration given by Ling Roth (1899, plate facing p. 138) of one of the ground stone implements recorded as Tasmanian by J. Barnard Davis (1874)—this material is discussed in the section on published accounts of ground artifacts recorded from Tasmania, below—suggests Davis' specimen is more closely approached, in general style, by this example than by any other specimen in the present series.

#### SPECIMEN C

#### (PLATE XIV)

*General Description.* A broad chisel, or axe, with length-breadth index 49: maximum breadth occurring at 10% of the length (from tip); maximum thickness, which is 41% of maximum breadth, at 62% of length. Plan subtriangular, the distal end shortly truncated obliquely from right to left. Side elevation roughly thus: proximal one-half lanceolate (about two and a half times as long as wide); succeeding one-third with more or less linear, subparallel margins (about 10% narrower distally than proximally); distal one-sixth about one-half of a narrowish ellipsoid. A longitudinal line joining proximal and distal extremities divides the traced side elevation into obverse and reverse sections with areas approximately in the ratio of two to one. Obverse decidedly convex longitudinally, a little less



convex transversely. Reverse longitudinally moderately convex; transversely, distal one-third fairly convex, middle one-third less rounded, proximal one-third flattish in its posterior half, decidedly concave mesially in its anterior half. Cutting edge, viewed end-on, is gently curved, concave towards reverse. Obverse polished—except for several small irregular shallow regions 3-5 from tip—to 100 behind tip, thereafter rough, obscurely pitted. Apart from a pitted area (left submarginal, beginning 55 behind tip in middle),  $35 \times 7-10$ , and a large subechnoidal region,  $50 \times 20$  (right, marginal, beginning 68 behind tip), virtually whole of reverse polished. The anterior half of the implement bears, on both faces, numerous fine, chiefly longitudinal scratches (see *Remarks*, below). The chord of the cutting edge in plan is 73: a parallel chord, 64 long, cutting off about  $\frac{2}{3}$  of the periphery, subtends an arc of a circle of radius 86.

*Registration Number.* Q.V.M. Reg. No. 1262.

*Dimensions.* Length 151.1. Breadth: maximum 74.7, at 14 behind tip; at middle of length 57.0. Thickness: maximum 31.0, at 94 behind tip; at middle of length 30.2. Maximum girth 170, at 30 behind tip. With implement on plane surface: lying on obverse, maximum height 33.5, height at midpoint of cutting edge 9.8; on reverse, 32.0, 13.3, respectively. Weight 423.90 gm. Specific gravity 2.73 gm per cc.

*Material.* Mr Q. J. Henderson informs me that the observations he has supplied on the material of Milligan's implement (specimen A) apply also to the present example.

*Locality.* East side of East Sandy Point, near Bridport, North Eastern Tasmania.

*History.* Present Museum label (in the handwriting of H. H. Scott) reads: 'Name—Stone Axe. History—Origin uncertain, most likely a New Zealand specimen. Lent by Mr T. A. Jessop (East Marrawah, 23rd October, 1923)'. Reference to the correspondence files has produced a letter from Mr Jessop, dated 21/10/'23, in which he noted the axe was given to him by Mr Norman Andrews, Bridport. In answer to inquiries, Mr Andrews has kindly supplied the following information (*in litt.* 12/5/'41). The specimen was found—date uncertain—by him on the eastern side of East Sandy Point, near Bridport, roughly about two chains above high water mark. Mr Andrews mentions he has found also in this locality a human skull [its present whereabouts I have been unable to trace] and a 'red stone that the blacks used to make red paint'. He observes that 'the shell beds, &c., are still there', and speaks of interesting searches made for implements in this locality: this is a well-known midden-site.

*Remarks.* As noted above (see *General Description*), the specimen exhibits, on the polished area of either face, numerous striae. These fine scratchings, just comfortably visible to the naked eye, vary in length from less than 1 to upwards of 20 mm.: adjacent striae—of which there are commonly about three, though there may be as many as 7 or 8, in a width of one millimetre—are characteristically subparallel. In general they run more or less longitudinally, but in some areas they are obliquely transverse: the latter areas are usually fairly sharply delimited patches, and occur both mesially (where they intersect the longitudinal striae) and, perhaps more frequently, laterally. It is possible these striae have been made subsequent to the general fashioning of the implement: are they perhaps attributable, for instance, to the use of the implement (possibly in European hands) as a whetstone? Mr Andrews assures me, however, the marks were not made while the implement was in his possession.

This implement differs from all others in the present series in that, when the proximal end is viewed axially, the cutting edge is not linear, but presents a distinct, if somewhat asymmetrical, curve. In this feature of hollow grinding on one face, and in some other aspects of general style, it exhibits an obvious resemblance to implements in the Museum collections obtained in Queensland and in the New Hebrides.

## SPECIMEN D

## (PLATE XV)

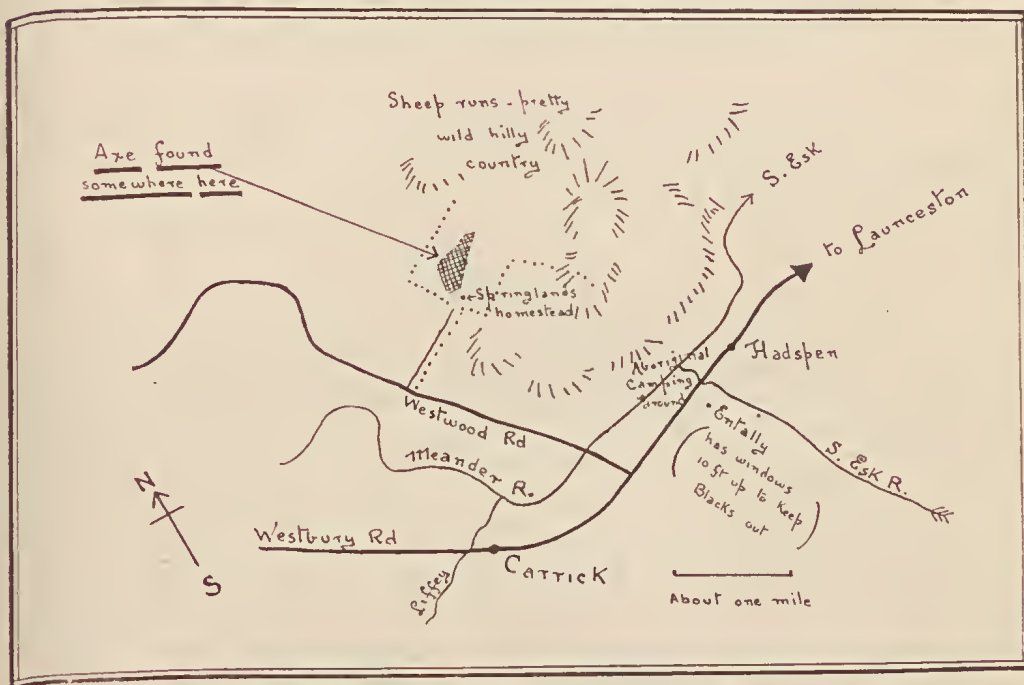
*General Description.* A long narrow axe, or chisel, with length-breadth index 31: maximum breadth occurring at 21% of the length (from tip); maximum thickness, which is 69% of maximum breadth, at 43% of length. Plan roughly an equilateral triangle (basal angle about  $85^\circ$ ), truncated (truncation somewhat oblique, concave) in its distal one-half: slightly waisted near middle of implement. In side elevation, lenticular, biconvex, the obverse and reverse faces representing approximately arcs of circles of radius 275, 180, respectively. On obverse, ground to about 60 behind tip, the grinding not deep enough to obliterate (a) three subconchoidal depressions with anterior margins partly entering into actual cutting edge, (b) a transverse pitted area, about  $10 \times 32$ , beginning about 12 behind tip, (c) some lateral irregularities of surface: rest of face behind ground area with pronounced subconchoidal depressions, whose greatest (axial) diameter ranges from 8 to 24. Transversely, obverse is flattish near primary cutting edge, fairly convex near end of ground region, irregularly convex or concave locally in distal half. Reverse ground to about 45 behind tip, the ground area including three or four depressions, one of which (probably subsequent to manufacture) enters the cutting edge: behind this, pitted for a distance of about 30; thereafter, to distal extremity, three more or less distinct longitudinal facets, the median one, which is inclined to each of the lateral ones at an angle of  $130^\circ$ - $140^\circ$ , widening distally to constitute the distal end of the implement, this end being distinctly, if roughly, fashioned to a sharp edge (not ground). Transversely, reverse is flattish near primary cutting edge, strongly convex near middle, thereafter with three facets, as described, lateral facets flattish or slightly convex, median one distinctly concave in the last 30, or so, of its length. The cutting edge approximately represents the arc of a circle of radius 140 subtended by a chord 42 long.

*Registration Number.* Q.V.M. Reg. No. 1938.68.

*Dimensions.* Length 145.0. Breadth: maximum 45.2, at 30 behind tip; at middle of length 34.8. Thickness: maximum 30.9, at 62 behind tip; at middle of length 28.5. Maximum girth 129, at 53 behind tip. With implement on plane surface: lying on obverse, maximum height 31.0, height of midpoint of cutting edge 16.5; on reverse, 30.1, 18.0, respectively. Weight 242.10 gm. Specific gravity 2.75 gm per cc.

*Material.* The material appears to be the same as, or very similar to, that of specimen F (q.v.).

*Locality.* Near *Springlands* homestead, near Westwood, near Hadspen, Northern Tasmania. A tracing of a sketch-map supplied (*in litt.*, 6/4/41) by the donor is given below (Text-Fig. 2): annotations are those of the donor, but the present writer has added approximate indications of compass bearings and distances.



Text-Fig. 2. Site of discovery of ground stone implement (specimen E) found near *Springlands* homestead, near Westwood, near Hadsphen, Tasmania (general location of site shown in Text-Fig. 1). Tracing of sketch supplied by donor, Miss R. A. V. McCulloch [approximate scale and compass points added].

*History.* The specimen was received at the Museum in 1938. The following details regarding its discovery are supplied in a letter by Miss R. A. V. McCulloch, dated 6th April, 1941. 'My father picked it up, end of 1925 or beginning of '26, on *Springlands*, which is an old-established farm behind Westwood—map appended' [see Text-fig. 2]. *Springlands* 'originally belonged to an irascible old M.P., John Millar, of some local picturesqueness'.

'I'm not sure of the exact spot within the hatched area [in Text-fig. 2], nor whether it lay on the surface, or was covered. I know that pasture land was being cleared up and broken, but much of the ground was cultivated in patient little patches a couple of generations ago. There were shepherd huts and assigned servants. Tools and leg-irons turn up'. It may be noted that on her map Miss McCulloch has indicated the existence of an Aboriginal camping ground at the junction of the South Esk and Meander Rivers.

Miss McCulloch goes on to say that the fact that she was herself seriously ill at the time militates against a more precise statement of the circumstances of discovery. She adds: 'My father had a fair amount of archaeological experience at Home (England), and was a sceptic in principle—said the thing was so obviously not Tasmanian and the place so long settled that it was most likely dropped around since white inhabitation, and it was bad science to make an elaborate hypothesis



when a simple one would do—so much so, that we handed it over to the owner of *Springlands* (Mrs Henry Wise) as something one of her forebears had lost. From her I reclaimed it for the Museum when' (requested to do so by the writer).

*Remarks.* The resemblance, both in material and workmanship, between the present specimen and specimen F, from Wattle Corner, would seem to be more marked than that between any other two implements in the series. They may be the product of the one culture.

#### SPECIMEN E

#### (PLATE XVI)

*General Description.* A subtriangular or petaloid chisel (? adze), with length-breadth index 48: maximum breadth occurring at 22% of the length (from tip); maximum thickness, which is 42% of maximum breadth, at 43% of length. The greater part of the obverse takes the form of a flattish (both longitudinally and transversely, slightly convex) subrectangular platform, beginning about 15 behind tip, and extending to distal end, its width about 25 near middle of length, narrowing at either end to about 21: from the distinct gently rounded sides of this platform the surface slopes away rather abruptly to either side of the implement, the slope being in general rather convex distally, flattish or even slightly concave proximally: from anterior edge of platform, surface passes down in rapid convex curve to cutting edge. On reverse is a larger, less well-defined trapezoidal platform, about 45 wide anteriorly, 35 near middle, 10 distally: left edge of platform is a well-marked, slightly rounded ridge, 1-3 from margin of implement; right edge less clearly defined, 5-7 from margin; anterior edge of platform (from which surface, as on obverse, passes down in rapid convex curve to cutting edge) not parallel with cutting edge, from which it is distant 13 at right, 18 at left. Apart from the deeper parts of several shallow depressions (on obverse, one, very shallow, about  $10 \times 5$ , towards left of platform in its middle one-third; on reverse, one, about  $15 \times 10$ , in distal one-fifth, one, about  $20 \times 7$ , beginning about 30 from tip, both being located along right margin of platform; on edges, various depressions, mostly small), the whole of the artifact is polished. The general contour of the rather irregular cutting edge approximates a straight line, not quite normal to the longitudinal axis of the implement.

*Registration Number.* Q.V.M. Reg. No. 1938.81.

*Dimensions.* Length 110.5. Breadth: maximum 53.5, at 24 behind tip; at middle of length 46.7. Thickness: maximum 22.3, at 47 behind tip; at middle of length 21.9. Maximum girth 126, at 22 behind tip. With implement on plane surface: lying on obverse, maximum height 9.8, height of midpoint of cutting edge 22.6; on reverse, 11.7, 22.0, respectively. Weight 202.66 gm. Specific gravity 2.97 gm per cc.

*Material.* Dark green nephrite, considered (Skinner, 1936) to be probably New Caledonian in origin. Skinner observes 'Dr W. N. Benson informs me that though serpentine is found in Australia, nephrite had not been recorded in Tasmanian geological literature up to 1910'.

*Locality.* East Devonport, Northern Tasmania; about eight hundred yards southward from the sea-beach, and about the same distance eastward from the Mersey River. Found in a gravel pit (the section being worked at the time was



about three feet below the level of the surface: see *History*, below), situated beside the lane that turns off from the Wesley Vale road to run alongside the Recreation Ground at East Devonport.

*History.* This specimen has already been the subject of a paper by Skinner (1936).

For convenience, Mr Willes' account of its discovery, as quoted by Skinner, is reproduced here. 'It was found on the 15th January, 1927, by Police Sergeant E. Hainsworth, whilst at Devonport, north-west coast of Tasmania. It appears that one afternoon he was passing a gravel pit at which a road gang was carting gravel. In the section, about three feet below the level of the surface, in the remains of what seemed to be an aboriginal camping place—fire ashes, and fragments of sea-shells, mixed with the usual sea-worn cobbles and gravel—he picked out this greenstone adze. Knowing my interest he gave it to me'.

This artifact was exhibited in Hobart at a meeting of the Royal Society of Tasmania in 1935, and at Launceston at a meeting of the Northern Branch of that Society on 30th September, 1935: at the latter meeting specimen B was also exhibited.

The specimen was subsequently donated by Mr C. L. Willes to this Museum.

*Remarks.* The original source of the implement, and the implications of its discovery in Tasmania have been fully discussed by Skinner in the paper cited. His general conclusions include: (a) the implement 'was New Caledonian both in type and in material' (p. 41); (b) 'such a tool . . . must, therefore, be either the product of some drift-voyage to Tasmania, or of some exploring visit from the outer world, or else a relic of the culture of the first natives to colonize Tasmania from which relatively advanced culture the more recent culture of the Tasmanian is a degenerate descendant'.

#### SPECIMEN F

#### (PLATE XVII)

*General Description.* A large, beautifully fashioned chisel-pointed axe, with distal end also sharpened to an edge, but not ground: length-breadth index 38: maximum breadth occurring at 10% of length (from tip); maximum thickness, which is 67% of maximum breadth, at 46% of length. Plan approximately an elongated symmetrical trapezoid, the distal end of the implement (the extent of which is contained 1·7 times in the proximal end, and 5·7 times in the length) and the proximal end representing the parallel sides. In plan roughly fusiform, the proximal three-tenths lanceolate, rather more than twice as long as wide; the succeeding three-fifths with approximately straight sides, slightly convergent posteriorly, where they are about 85% as far apart as they are anteriorly; the distal one-tenth shortly lanceolate, about two-thirds as long as wide. Obverse ground to about 125 behind tip, the anterior half of this region with a single shallow unobliterated depression  $4 \times 18$ , beginning 35 behind tip, the posterior half with some lateral subconchoidal and pitted areas not ground smooth: behind ground portion, a few large shallow subconchoidal depressions to within 16 of distal end, this last one-twelfth of length being abruptly struck off to form sharp distal edge of artifact. Transversely, obverse slightly convex throughout. Reverse ground

to about same level as obverse, and, apart from minor variations in disposition of small areas not ground out, in general not greatly dissimilar from obverse. The obverse and reverse do differ, however, rather strikingly in one feature: the former slopes, in the proximal three-tenths of the length, in a smooth curve to the cutting edge; the latter is bevelled, with a distinct chin, parallel with, and about 25 behind, cutting edge. Sides of implement very distinct surfaces, nearly flat, particularly in the anterior half, or a little more, which is ground. Cutting edge nearly the arc of a circle of radius 75 subtended by a chord 56 long.

*Registration Number.* Q.V.M. Reg. No. 1940.330.

*Dimensions.* Length 193.5. Breadth: maximum 58.6, at 20 behind tip; at middle of length 51.6. Thickness: maximum 39.1, at 90 behind tip; at middle of length 38.8. Maximum girth 176, at 43 behind tip. With implement on plane surface: lying on obverse, maximum height 39.2, height of midpoint of cutting edge 13.1; on reverse 39.6, 23.0, respectively. Weight 738.18 gm. Specific gravity 2.71 gm per cc.

*Material.* At my request, Mr D. J. Mahony, Director, National Museum, Melbourne, had a slice prepared from a small flake taken from the base of the specimen, and examined it microscopically. In a letter dated 5th May, 1941, he informed me that the rock is a fine grained hornfels with abundant secondary silica, some sillimanite and occasional thin veins of chlorite: it is a metamorphosed sedimentary rock which possibly contained volcanic ash, but little or none of the original material has escaped alteration.

Mr Mahony also examined a slice of a New Zealand axe made from material superficially resembling the material of Mr Bridgborn's specimen, but it proved to be a grained olivine basalt.

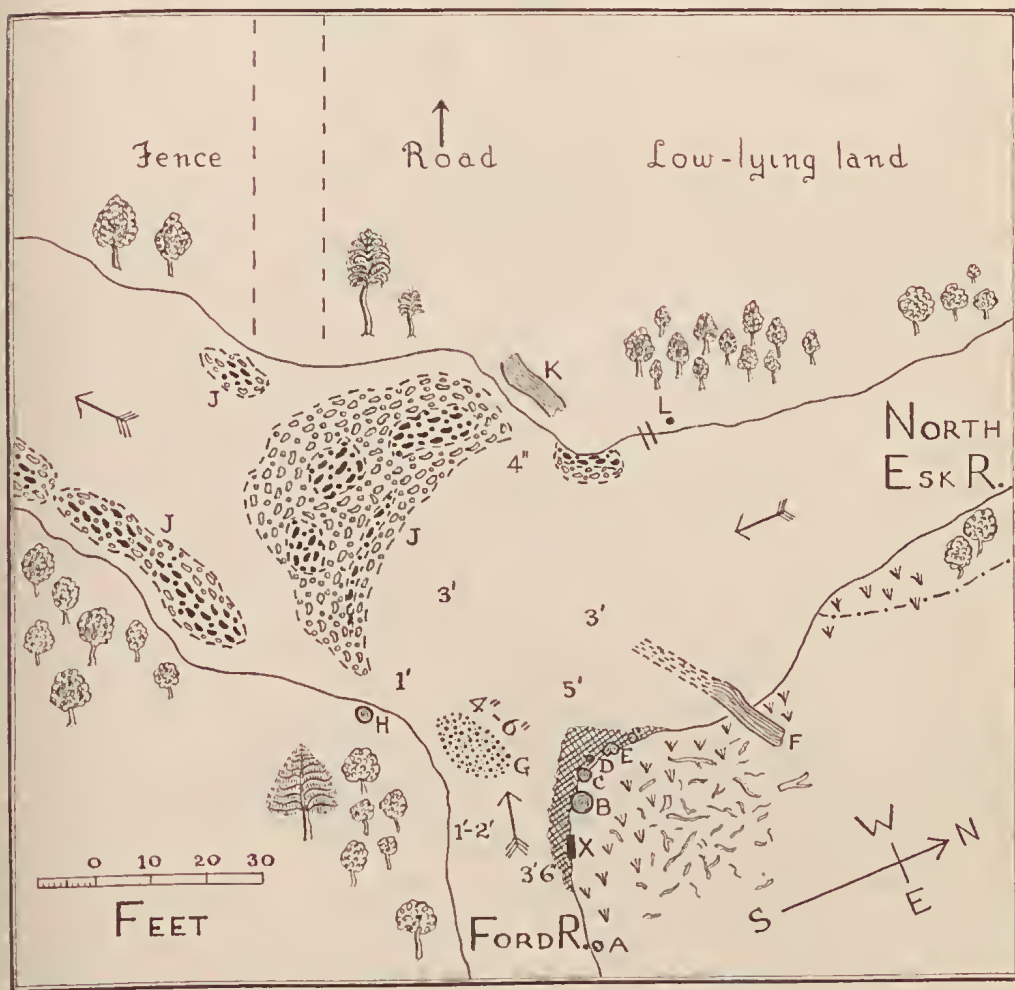
Mr Henderson, who has examined the microsection forwarded by Mr Mahony, in an attempt to determine whether or no the material is of a typically Tasmanian type, informs me 'there is no reason why it should not be Tasmanian in origin, but on the other hand there is also no reason why we should adopt an extra-Tasmanian origin. In other words, the type is a fairly ubiquitous one, with no diagnostic characters on which to assume it is definitely Tasmanian in origin'.

*Locality.* Right bank of Ford River, some three to four yards from its junction with the North Esk River, Wattle Corner, near Upper Blessington, Northern Tasmania: about three feet six inches below surface, projecting from face of bank. Further details concerning locality are noted in the section on *History* below.

*History.* About 1934, Mr F. J. Bridgborn, while wading in the river for the purpose of fishing, had his attention attracted by what later proved to be the proximal end of the implement, projecting some two inches from the subvertical face of the bank, at a depth estimated by him at three feet six inches below the general ground-level. The axe was *in situ* in the bank face, and its unexposed portion was securely imbedded in the soil. The implement was presented to the Museum on 14th October, 1940.

On 16th March, 1941, the writer accompanied Mr Bridgborn to the site, which is about twenty-six miles by road from Launceston, in a sparsely populated part of the country, the only house in the immediate neighbourhood being that of Mr W. Whittle at Wattle Corner, situated some three-quarters of a mile away on higher ground. A road runs from Launceston, roughly following the general course of the North Esk, to near the confluence of the North Esk and Ford rivers (which is reached by a deviation of about a mile, partly by road, partly over

fields); this road continues in a more or less easterly direction, and after crossing the saddle between Ben Lomond and Ben Nevis, leads to Mathinna, whence it turns southward to Fingal. I understand that before the road was built, an old track passed through this district, the nature of the country making this route a natural outlet from Launceston towards the north-eastern part of the Island.



Text-Fig. 3. Sketch map of site of discovery of ground stone implement (specimen F) found near Wattle Corner, Tasmania, by Mr F. J. Bridgborn (general location of site shown in Text-Fig. 1). The point at which the specimen was found partly projecting, at a depth of about three feet six inches below the general level of the ground, from the right bank of the Ford River is marked by X: for other reference letters see text.



Text-fig. 3 shows a sketch-map made at the time of our visit. The implement was found at X. Other marked points on the map are: A, tea-tree (*Leptospermum lanigerum*), about 12 feet high, 18 feet from X; B, C, E, gum-trees (*Eucalyptus cf salicifolia*); B, 4 feet from X, diameter about 6 inches, growing on top of bank; C, diameter about 3 feet, growing on bank, sloping out over river; E, double trunk of combined diameter of 2 feet 5 inches, growing from face of bank, at slightly above middle of height of face; D, tea-tree, diameter of main trunk 2 feet, growing from middle of face of bank sloping over river; F, large prone eucalyptus trunk; G, sand-bank; H, dogwood tree (*Pomaderris apetala*); J, bank of shingle, partly above surface of water; K, large prone log; L, isolated fence-post.

Figures in the rivers show approximate depths of water. The points E, H, K were used for a rough triangulation, distances being determined with the aid of a *Leica* camera range finder. A series of 36 exposures made with the *Leica* unfortunately failed, for some undetermined reason, to yield a single picture.

Mr Bridgborn informed me that the contour of the beds of the rivers in the immediate vicinity had altered considerably since the time at which the implement was found. At the time of our visit the general level of the top of the bank at X was between three feet four inches and three feet six inches above the water, which was here about two feet six inches deep. At the date of the discovery of the artifact, a strip of sandy shore, wide enough to stand on comfortably, extended from near D round past C to beyond X: this region is hatched in the sketch-map. There was then thus exposed a bank-face some six feet high, the base of the bank being fringed with a sandy strip raised just above water-level; and it was from a little below the level of the middle of this face that the implement was observed projecting. At that time, also, the present sand-bank G was non-existent, and at the point a few feet out in the stream from D, where a depth of five feet is now shown, the water was then a great deal shallower.

Immediately inland from X the bank consists of bare earth, with scattered clumps of tussock grass, partly strewn with a sparse litter of small burnt boughs. After the (abortive) photographic exposures were made, the bank was cut away, down to the water level, for three to four feet on either side of X, giving a vertical face some three feet back from the most advanced point of the original irregular bank-face. No other implements were found. At a depth of two feet a buried eucalyptus trunk, eight inches in diameter, in a good state of preservation, with much of the bark still in position, was encountered, lying horizontally.

The soil removed is a weakly podsolized sandy loam. I am indebted to Mr F. H. Johnson, Government Analyst, Hobart, for the observations quoted below: the three horizons A, B, C of the profile, are, respectively, at general ground level, midway between ground level and surface of water (i.e., forty to forty-two inches below surface), and at water level. 'The A horizon is dark grey in colour, and has a PH value of 5.7, which is slightly acid. The B horizon shows definite signs of leaching of the clay fraction, and has a PH value of 6.2. The C horizon or zone of deposition is darker in colour and more clayey in nature, and has a PH of 5.3. Yellow mica can be seen deposited in this horizon, and is in fairly large quantity, coming from a parent micaceous sandstone, which are common in Tasmania. The soil is a true podsol'.

Rock samples collected in the immediate vicinity—chiefly from the shingle-bank (Text-fig. 3, J)—included fine and coarse grey granite, quartzite, and slate. Nothing at all resembling the material from which the implement was fashioned was observed.



*Remarks.* This is at once the largest and the most featly fashioned implement of the series. It has been hammer dressed. The reverse is bevelled, with formation of a distinct chin.

As already noted, it finds its nearest ally in specimen D, which resembles it fairly closely in general form, and, apparently, quite closely as regards material. Both D and F were found well inland (an observation that applies also to specimen G), and both exhibit a distinct secondary sharp-edge, flaked but not ground, at the distal extremity.

The rectangular section of the present specimen, suggestive of Polynesian origin, is fully apparent in specimen D only near the middle of the length.

#### SPECIMEN G

##### (PLATE XVIII)

*General Description.* A short, stout, subovoid axe, or adze, with length-breadth index 67: maximum breadth occurring at 69% of the length (from tip); maximum thickness, which is 75% of maximum breadth, at 63% of length. Side elevation very nearly symmetrically lanceolate; abruptly truncate distally at an angle of about 45° (viewed end-on, this coarsely pitted distal face is seen to be concave, with a maximum depth of 4.5), with the result that obverse face is some 30% shorter than reverse. The whole of each face is ground; and apart from (*a*), on obverse, a slightly depressed rugose area (beginning about 50 behind tip, extending from about longitudinal axis towards right side of implement), about 20 × 30; (*b*) on reverse, a flattish ovate area (distal, right, submarginal), about 23 × 16; (*c*) a few scattered pittings, chiefly distal, on either face, both faces are polished smooth. The cutting edge approximates very closely to the arc of a circle of radius 32.5 subtended by a chord of 46.

The large depression visible in Plate XVIII, fig. A, above and to the right of the reference-letter, has been caused by the removal of a sample of the rock for petrological examination.

*Registration Number.* Q.V.M. Reg. No. L.I. 1941.7.

*Dimensions.* Length 102.6. Breadth: maximum 68.5, at 71 behind tip; at middle of length 66.6. Thickness: maximum 51.0, at 69 behind tip; at middle of length 46.5. Maximum girth 198, at 73 behind tip. With implement on plane surface: lying on obverse, maximum height 51.0, height of midpoint of cutting edge 17.6; on reverse, 51.5, 18.5, respectively. Weight 540.55 gm. Specific gravity 3.04 gm per cc.

*Material.* Mr Q. J. Henderson observes of this specimen, 'This is a typical Mesozoic dolerite.

'The thin section shows the rock to be essentially a mixture of labradorite and augite with abundant ilmenite, in part altered to leucoxene. The ophitic structure is well developed; the pyroxene forming a cement, enveloping and moulding itself on the felspar prisms. Chloritization is well advanced. This intersertal structure is more usual in the Mesozoic dolerites.

'I should say there is no reasonable doubt that this specimen is typically Tasmanian in origin'.

*Locality.* Northdown farm, between East Devonport and Port Sorell, Northern Tasmania; ploughed up.

*History.* The following information has been kindly supplied (*in litt.*, 12/4/'41) by the owner of the specimen, Mr H. Stuart Dove, Devonport. 'It was

purchased from Foster Leek after he had opened his Museum at Mersey Bluff [Devonport]; it had been given him by Mr Edward Thomas of the *Northdown* farm, ploughed up there. It must be close on thirty years since it came into my possession; Leek had had it some time, and Thomas also, so it must be at least 40 years since it was found. Being ploughed up would indicate a depth of about four inches below the surface. It was the original *Northdown* property where it was discovered, settled and named by Capt B. B. Thomas, who was speared by the natives between there and Port Sorell; full details in Fenton's *Bush Life in Tasmania*, pp. 18, 19, 20. As several mainland natives were reported to have been with the Port Sorell lot shortly before, including the infamous 'Mosquito', it is possible that my axe had been brought over by them, and lost. The material is probably diorite, although the polished part shows a decidedly greenish tint when the light falls upon it at a certain angle. The Thomas who found it was, I believe, a grand-nephew of the original B. B. Thomas, and the property is still in the same family'.

The Captain Bartholomew Boyle Thomas referred to in Mr Dove's letter landed in Tasmania (Hobart Town) on 3rd May, 1826; he and his overseer James Parker, were speared by the natives on 31st August, 1831. He is stated to have been 'the first settler established on the line of coast between Emu Bay and the western head of the Tamar' (Calder, 1875, p. 78). Calder (p. 80) says 'A goodly detachment of the Big River tribe were at that time sojourning at Port Sorell'. They were thus far from their headquarters, as they normally occupied 'the Valley of the Derwent—with its tributaries Ouse (formerly Big River), Clyde, and Shannon—and the elevated plateau of the Lake Country, 2000 to 2500 feet above sea level' (Walker, 1898, p. 183).

*Remarks.* This implement is more massive than, and, with its extensive distal platform, quite different in shape from, any other in the series. Its general appearance is not unlike that of the proximal portion of some Queensland tanged axes; and it may possibly be incomplete.

## SOUTH AUSTRALIAN SPEARHEAD FOUND IN A LAUNCESTON GARDEN

*History.* In April, 1940, Major R. E. Smith, 25 Trevallyn Crescent, Launceston, found in his garden a lanceolate quartzite spearhead 69 long, 22 in maximum width, 6·7 in maximum thickness. The specimen is now in the Museum collections (Q.V.M. Reg. No. 1941.221).

Major Smith had at that date been living at the address noted for five and a half years, during which period the garden had been in constant cultivation. When the artifact was found, he was picking up stones from the land, and among the stones, which had been washed fairly clean by recent rain, the spearhead was seen lying on the ground. In the course of a statement kindly supplied when donating the specimen to the Museum, Major Smith observes, 'I am familiar with native flints, and I recognized this as being quite different, because it had been chipped into such a regular shape. A few weeks afterwards, I had an interview with the previous occupier of the place, a Mr Lester, then living at Seottdale. He called at my house, and I showed him the spearhead, which he at once recognized as being one that he had got near Mount Gambier in South Australia, and had lost years ago. During the time I have been living at this place I have never found any native implements excepting this one'.

*Remarks.* It is deemed desirable to place this find on record. In function and character this chipped spearhead differs from the ground stone axes already described; with the possible exception of the St Leonards axe (specimen B), the exact site of which is not known, it is the only artifact among those here noted that was encountered in what may fairly be termed an urban region; it is the only example whose source is definitely ascertained, and to account for whose presence at the site of discovery there is a known explanation. To what extent, if any, the finding of this artifact is relevant to the problem presented by the series of ground implements here recorded is a matter regarding which individual judgments may well differ.

#### PUBLISHED ACCOUNTS OF GROUND ARTIFACTS RECORDED FROM TASMANIA

So far as I have been able to ascertain, published accounts of ground stone artifacts found in, or stated to have come from, Tasmania are confined to the records noted below.

1. *J. Barnard Davis' Specimens.* The history of three ground artifacts referred to by Davis (1874) is briefly as follows. (a) Presented by G. A. Robinson (Protector of the Aborigines in Tasmania: subsequently held the same office in Victoria) to Dr J. Milligan (see above, under SPECIMEN A: *Remarks*). (b) Handed on, as being from Tasmania, by Milligan to Davis, who recorded them, along with 'a few exceedingly rude stone chippings' (Davis, 1874). (c) At Davis' death they passed 'into the hands of a gentleman at Brighton, from whom the three implements . . . were purchased by the Corporation, and placed in the Town Museum' (Tylor, 1894). (d) Tylor, who gives good evidence to show that the implements preserved at Brighton were Davis' specimens, discussed them at a Meeting of the British Association, and published (1894) descriptions and figures of them: he observed 'on inspection of these implements it may be said without hesitation that they are of the Australian type of ground stone implements'; and came to the conclusion, 'It is thus probable that Dr Barnard Davis' three ground implements were either made by Australians or by Tasmanians, who had learnt the craft from them'. (e) Ling Roth (1899) summarized the history of these specimens, and figured (plate facing p. 138) a general view and a section of one of them: Ling Roth's account of this and related matters includes several minor slips—implements stated (legend to plate facing p. 128; again on p. lxxxix) to have been given to J. Barnard Davis by Robinson (apparently should be Milligan; possibly—see Tylor's reference to labels on specimens in Brighton Museum—Lady Franklin also concerned in the gift); J. Barnard Davis referred to (p. 139) as Dr Barnard.

Far from flattering opinions of the carefulness of both Milligan and Robinson have been expressed by Walker (1900, p. 68), who bluntly says 'Several of these errors in attributing to the Tasmanians implements they did not know in their native state have arisen from the carelessness or ignorance of observers, some of whom might have been expected to know better, notably G. A. Robinson and Dr Milligan'. Ling Roth (p. lxxxix) expresses himself in similar terms: however, his statement that 'Milligan knew nothing of the Aborigines until 1847, when he was put in charge of them at Oyster Cove after their return from Flinder's Island' quite ignores Milligan's ten or twelve years as Van Diemen's Land Company's Surgeon, when he may well have come into some contact (possibly even fairly intimate contact) with the Aborigines; the evidence of locality would suggest the probability that it was during this period that he acquired the partly ground axe described above.



2. *Dr F. Noetling's Specimen.* Noetling (1912*b*, p. 105) states, 'It has always been most emphatically asserted that the art of grinding was unknown to the aborigines. My collections have, however, proved that the operation of grinding was not unknown to them. It appears, however, that they never, under any circumstances, used it in the manufacture of *tero-watta*, but strictly limited it to the manufacture of the flat, so-called "sacred" stone. [A footnote reads 'I prefer to use the term "sacred" instead of "magic" in describing this peculiar group of stones, because it better expresses their nature than the word magic']. I never found a single *tero-watta* which even shows the faintest indication of being ground or polished, but I have found numerous sacred stones, which show more or less distinct traces of having been subjected to the process of grinding. I described some specimens in a previous paper [1907], but, though the indications may, perhaps, not be quite so convincing, the specimen Pl. XVII from the Old Beach [3-4 miles south-east from Bridgewater] gives us an absolute proof. This specimen was found by Mr E. S. Anthony, who kindly presented it to me. It is an oval, very flat diabase pebble, measuring  $5 \times 3\frac{1}{2}$  to  $1\frac{1}{4}$  inch, and weighing 1 lb. 8 oz. avoirdupois. Both the upper and lower sides are flat, but while the lower side is rough, probably on account of weathering, the upper side has been most elaborately polished and ground. The grinding even extended to the peripheral portion, and fine sharp edges were produced. Three rough marks, extending obliquely across the upper side, form a conspicuous feature, particularly as the surface between them is slightly convex. In my opinion, these marks are incidental, and they represent a portion of the original crust, which was not quite removed when the pebble was ground.'

See also discussion on sacred stones, with references, by Ling Roth (1899, p. 57); Dove (1911); and description and figure of cylindroconical stone by Dove (1934), this specimen, Mr Dove informs me (*in litt.*, 7/5/41), not being ground.

3. *Mr C. L. Willes' Specimen.* This specimen, discussed and figured by Skinner (1936), has already been dealt with above. (SPECIMEN E).

4. *Wunderly (1938*a*)* mentions a ground stone implement from Tasmania. 'Stone implements discovered by Pulleine on the west coast are illustrated in his paper [1929]. They are quite unlike the usual type of implements found in Tasmania. Among them are a ground "axe of basanite", a "chisel-shaped implement", long "shaped pounders of schistose quartzite", and a "fragment of smooth slaty rock, perforated and formed to suggest a bull-roarer". The words quoted are Pulleine's' (p. 122). It will be observed that in the paragraph quoted above, it is not stated that Pulleine himself, in the paper cited, described the axe of basanite as being ground. Judging from Pulleine's paper (1928), it would seem that he himself probably did not regard the axe as a ground implement: reasons for this statement are (*a*) the legend to the illustration (plate VII, fig. 1) reads simply 'Axe of basanite, Arthur River'; (*b*) this implement is nowhere specifically referred to in the text (fig. 2 in this plate also receives no special mention, but may perhaps be taken to be included in the general statement 'occasionally the form [of hand axes] is chisel-like' (p. 308); figs 3, 4, and 5 are noted and briefly described (p. 307), fig. 3 as one of two unusual implements, figs 4 and 5 in a separate paragraph); (*c*) in his treatment of Tasmanian stone culture in this paper Pulleine appears throughout to take it for granted that it was wholly archaeoliths, the implements merely being chipped (p. 304, and *passim*).

Attention may be called to the publication, since the present paper has been in type, of an account by Tindale (1942) of a Tasmanian implement made from glass. This implement, found at Kempton, in 1938, by Mr F. D. Maning, has



been made from the base of an old-fashioned glass bottle. It is described as 'an irregularly shaped notched scraper 6.5 cm. in diameter with three indentations, the are of each of which has a radius of approximately 6 mm'.

### DISCUSSION

Except where the contrary is expressly indicated, observations in this section are to be construed as relating solely to the seven ground artifacts (A-G) described above.

In a consideration of the problem presented by these seven artifacts, questions that at once suggest themselves include the following. 1. Do they constitute a homogeneous group? 2. Were they fashioned in Tasmania; if so, by whom? 3. If not made in Tasmania, how did they come here? In seeking answers to these questions, certain facts and considerations, some of which are noted below, may perhaps profitably be borne in mind.

#### 1. DO THEY CONSTITUTE A HOMOGENEOUS GROUP?

The homogeneity or heterogeneity of the series may conveniently be examined in respect to (i) *source*; (ii) *contemporaneity*; (iii) *distribution*; (iv) *style*; (v) *history*.

(i) *Source*. Specimen A is stated to have been obtained from the Tasmanians: there is no definite evidence to show whether they made it, or acquired it, though the natural implication of the history of its preservation is that Milligan regarded it as of some special interest, presumably probably because he accepted it as being Tasmanian made. Skinner considers specimen E to be of New Caledonian origin. As noted in the descriptions, other artifacts exhibit resemblances to implements from Australia and Polynesia.

The series is probably not a homogeneous one as regards source.

(ii) *Contemporaneity*. If its history is reliable, specimen A would presumably have been obtained between about 1830 and 1860: as to when it was manufactured, there is no evidence other than the upward limit imposed by the latter of these two dates.

The evidence for antiquity from depth of occurrence is: A, not applicable; B, no data; C, superficial; D, uncertain (probably on surface, or at no great depth); E, uncertain (perhaps at three feet); F, about three feet six inches; G, ploughed up (perhaps four inches). On the score of depth, therefore, available data suggests specimen F may be of some considerable age, the same possibility, though not, or less, directly suggested, being not necessarily excluded in the case of specimens B, E.

No specimen exhibits an undoubted patination.

(iii) *Distribution*. The distribution is reasonably compatible with the existence of a single historical dossier for the series: see, however, general observations on distribution, above.

A common history for the specimen is, of course, more congenial to some possible explanations of their existence in the localities in which they were found than to others.

(iv) *Style*. While the series is homogenous to the extent that all members of it are ground stone axes, there appears to exist a considerable interval in culture status between such extremes as the small, rather roughly fashioned specimen A, ground only in about its proximal one-tenth, and the large, beautifully fashioned specimen F, ground over the greater part of its surface. The latter,

specimen F, has been hammer-dressed before being ground to an edge, and observation that does not apply to at any rate the majority of the other specimens in the series.

On the score of style, therefore, the series presents some considerable diversity, the most marked general resemblance between any of the implements perhaps being that between D and F.

(v) *History*. Specimen A stands alone in being said to have been obtained from the Tasmanian Aborigines.

It is perhaps expedient to point out that a probable heterogeneity of source for the series, while distinctly diminishing the mathematical probability of the existence of a single dossier for the series, does not, of course, necessarily exclude the possible existence within the series of one or more groups the history of which may include significant anthropological implications.

To avoid an intolerable sequence of specifications of the type of 'some or all of the implements', we shall, in other succeeding paragraphs, adopt a verbal convention of homogeneity of the series.

## 2. WERE THEY FASHIONED IN TASMANIA: IF SO, BY WHOM?

If the implements were made in Tasmania, they were made (i) by the historic Tasmanian Aboriginal race, or (ii) by some other race, or (a possibility that we may conveniently consider under a separate heading) (iii) by individuals of mixed blood.

### (i) *Manufacture in Tasmania by the Historic Tasmanian Aborigines*

In this connexion we may profitably inquire regarding (a) what association, if any, with the Tasmanian Aborigines their history discloses; (b) the practising of grinding by the Tasmanians as an integral part of their own lithic industry; (c) the extent to which the Tasmanians were subject to extra-Tasmanian cultural contacts, together with the likely nature and degree of the influence of such contacts; (d) the petrological evidence. Some facts and considerations bearing on (a)-(d) are noted below.

(a) Direct association is reported only in the case of specimen A. Specimen C was found at or near a midden, and specimen D not very distant from a camp-site. A fair number of ordinary chipped implements have been obtained at St Leonards, the locality from which B came. Specimens E and G come from localities (Devonport, Northdown) much frequented by the natives. There is available no direct evidence, either positive or negative, regarding the association of the Aborigines with the exact locality at which F was secured: there is, however, every reason to believe that the district would be known to them.

(b) The question as to whether the Tasmanians were accustomed, as an integral part of their own culture, to grind their implements has been the subject of direct or indirect comment, or discussion, by Johnston (1888), Agnew (1874, p. 22), Scott (1873, p. 24), Thirkell (1874, p. 28), Walker (1900), Brough Smyth (1878), Noetling (1907, 1910, 1911a, 1911b, 1912a, 1912b, &c.), Tylor (1894), J. B. Davis (1874), Ling Roth (1899), Verworn (1908), Klaatseh (1908), Pulleine (1929), Balfour (1929), Edgeworth David (1924), Tindale (1927b), Meston (1927), and many others.

It may be observed that in the relevant sentence of Thirkell's letter to Agnew ('They had no handle to the stone, merely an indent for the thumb, and the edge ground (?chipped) as sharp as they could against another stone') the parenthetic

*?chipped* appears in the letter (as an editorial addition?) as published in the *Papers and Proceedings of the Royal Society of Tasmania* (1874, p. 28), but not in the extract quoted (after Tylor) by Ling Roth (p. 148).

Tylor's conclusions concerning J. Barnard Davis' three ground implements, and Noetling's opinion that the Tasmanians practised grinding in the fashioning of saered stones, but not otherwise, have already been quoted. Ling Roth's views are suceinctly noted by citing two entries in his index—'Ground stone implements Australian, *not* Tasmanian, 149' (index, p. c, under *G*); 'none ground, 149' (index, p. cii, under *Stone Implements*).

The generally received opinion is that the Tasmanian, or, at any rate, the Tasmanian of the nineteenth century, did not normally grind his implements, though some authorities consider he may exceptionally have done so under extra-Tasmanian guidance or influence.

That thousands of chipped implements occur on middens unaccompanied by ground artifacts is an established fact.

There remains, of course, the possibility that the Tasmanians possessed, at a period anterior to that at which they came under the observation of Europeans, a higher culture than that we are accustomed to associate with them. On this supposition, the present implements could conceivably represent survivals of a lost art. Such a degeneration in lithic skill has, indeed, already been noted by Skinner (1936) as a possible explanation in the case of Willes' axe (specimen E).

In discussing the migration to Tasmania, Pulleine (1929), who finds himself opposed to the overlanders, has pictured (p. 301) the possible loss of the craft of canoc-making, and quotes Perry (1923), 'Once the thread of continuity in any craft is dropped it is not picked up again: the craft can only be reintroduced by someone who knows it'. On the other hand, he expressly exempts the manufacture of stone artifacts from his suggested cultural retrogression. ('If we, however, attack the problem of the date of arrival from the cultural anthropological side, we have at least one fact which we must regard as certain, *i.e.*, the advent of the Tasmanians occurred before they were influenced by contact with neolithic culture. I think we make take it for granted that, whatever else is forgotten, the preparation of their stone implements would have been remembered, and the accompanying art of pottery would have survived' (p. 304)).

(c) The extent to which the Tasmanians were subject to extra-Tasmanian native contacts subsequent to European settlement has been discussed by Wood Jones (1935), Walker (1900), West (1852), Calder (1875), Ling Roth (1899), Wunderly (1938*a*, 1938*b*), and many others.

Wood Jones observes 'apparently the number of Australians in Tasmania was considerable'.

References by Wunderly (1938*a*, 1938*b*, 1939) to the mating of Tasmanians with non-Tasmanians are noted below in a separate section (*iii*) in which the possibility of manufacture of the present implements by individuals of mixed-blood is considered.

The history of the notorious Musquito—a member of the Broken Hill tribe, New South Wales, transported, first to Norfolk Island, then in 1813 to Tasmania; a leader among the 'Tame Mob' that about 1819 began a series of attacks on white settlers; hanged, 25th February, 1825, for the murder of William Holyhoak, or Hollyoak, or Hollyoake, and Patrick Arthur—is given in some detail by West



(1852), Calder (1875), Bonwick (1870): see also article on Musquito in the *Australian Encyclopedia* (1926, p. 170). It is of interest to note that another of Musquito's victims was an Otaheitan (Mammoa, Marmoa, or Mormor). Musquito apparently exercised considerable influence over the Tasmanian natives with whom he came in contact: it is even stated he initiated some of them into the rudiments of agriculture. While in Tasmania, he seems to have spent most of his time in, or south of, the Midlands (noted as being at Oatlands with the 'Tame Mob' in 1820; in 1821 at Oyster Bay, where he 'obtained a great influence over the previously quiet Oyster Bay tribe'). There is, however, some evidence to suggest he may have at least visited the north of the Island, perhaps in the course of tribal migrations—see, for instance, the report of his temporary association with Port Sorell natives mentioned by Mr H. Stuart Dove in his account, quoted on page 52, of the history of specimen G, found at *Northdown*.

Speaking of the conflict between natives and whites, West (p. 22) observes 'Among the causes of enmity, referred to by whites of every period, the abduction of women by sealers is noted the earliest, and continued to the last'. This matter was the subject of considerable evidence, notably by Robinson, Capt. Kelly, and Capt. Hobbs, submitted to the Aboriginal Committee in 1830.

In one of his Reports, Robinson gives the names of every individual then remaining of two of the tribes, who lived within reach of the sealers—viz, seventy-four of whom only three were females (and two of these three did not properly belong to either tribe, being only visitors). 'This vast disproportion of the sexes', he says in his report, 20th November, 1830, 'has been occasioned principally by the sealers, who have stolen their women, and transported them to the different islands'. And in a marginal note against this passage, he says 'there are at present not less than 50 aboriginal females kept in slavery on the different islands in Banks' and Bass's Straits' (Calder, p. 14). From various accounts it is clear that some at least of the women who accompanied, or were abducted by, the sealers returned subsequently to their own people: during their exile, they may well have come into contact upon occasion with non-Tasmanian natives.

For additional information on sealers and on the conditions obtaining on the islands of Bass Strait in the early part of the nineteenth century, see, among others, Calder (1875), West (1852), Fenton (1884), Bonwick (1870), Jeffreys (1854), Kelly (1921), Backhouse (1843), Giblin (1928), Dunbabin (1929), Murray (1929).

Several abducted women, incidentally, were taken by sealers probably as far afield as Western Australia, and certainly to Kangaroo Island, South Australia, where, Tindale (1927, a) has recently shown, one or more of them probably survived to a date subsequent to that of the death of Truganini (8th May, 1876), hitherto generally believed to be the last of the Tasmanians.

It is recorded that Robinson took at least 16 Tasmanians with him when he was made Protector at Port Phillip in 1838: but I have been unable to find any evidence as to whether any of them returned to this State. Truganini herself visited Melbourne in 1842, at which time she would be about thirty years old.

The likely influence of these, and perhaps other, contacts is largely a matter of speculation. In assessing their significance, the views of Calder (1875, pp. 54-55) on the susceptibility of the Tasmanian to external cultural influence, and the history of Musquito's relations with the local natives deserve consideration.

Another aspect of the problem is presented by the use of handled implements, fire-drills, shields, and so on, the making of bone-pointed or jagged spears, the

manufacture of baskets of patterns differing from those of authentic local origin, and other culture-elements that have at various times been attributed to the Tasmanians: see, *e.g.*, Walker, Ling Roth, Wood Jones, and records in a paper by van Gooch (1942, p. 21) of a shield of Victorian type obtained in Tasmania or on Flinders Island, and a boomcrang found at *Avondale*, near East Devonport, in 1851.

It is of some interest to note that Lord (1921), quoting a contemporary account of an attack by bushrangers, between 1834 and 1843, on 'Mr Cole's House, Snake Island, D'Entrecasteaux Channel', records that Mr Cole's son, 'a boy of 14, came in with a heavy New Zealand club, with which he dealt one of the assailants such a blow as to stun him'.

The consensus of present-day opinion would seem to be that the attribution of these cultural elements to the Tasmanians is either based (in the case of early records) on confusion between insular and mainland tribes, or traceable, directly or indirectly, to the introduction into Tasmania, during the nineteenth century, of aborigines from Australia.

As regards the problem presented by the actual implements here described, the natural comment would seem to be that while the production by Tasmanians, under mainland aboriginal influence, of such a partly ground axe as Milligan's example (specimen A) appears to be a not unlikely possibility, the production by Tasmanians (at least as we customarily picture them), under any circumstances at all, of such an elaborately fashioned implement as Bridgborn's example (specimen F) appears to be a highly unlikely possibility.

(d) *Petrological Evidence.* The petrological evidence is: first, material of specimen E probably not Tasmanian, perhaps New Caledonian; secondly, material of specimens B and G quite probably Tasmanian; thirdly, material of specimens A and C of uncertain source, not distinctly non-Tasmanian in character, of specimens D and F of uncertain source, not distinctly Tasmanian or non-Tasmanian in character. So far as it goes, therefore, the evidence derived from an examination of the rocks of which the artifacts are made is in one instance more or less definitely opposed to an assumption of local production from local material, and in the remaining cases either distinctly favourable, or not definitely unfavourable, to such an assumption.

(ii) *Manufacture in Tasmania by a Race other than the Historic Tasmanian Aborigines*

If made in Tasmania by some native race other than the historic Tasmanian Aborigines, the implements were fashioned by either (a) visiting natives, or (b) a people resident at some period on the Island.

(a) Some record visits of extra-Tasmanian natives to Tasmania have been noted above. An hypothesis of occasional, perhaps unpremeditated, visits by non-Tasmanians has already been suggested by Skinner as affording one possible explanation of the finding in Tasmania of specimen E. The occurrence on the West Coast of Australian full-bloods and Tasmanian-Australian mixed-bloods, of which Wunderly claims there is evidence, is noted in subsection (iii) below.

(b) It may be fairly assumed, with a high degree of probability, that if a people other than the historic Tasmanians at any period inhabited Tasmania, in, at least, the sense of their constituting the general population of the island

(compare subsection (iii)) their occupation was already a thing of the past by the time of the advent of Europeans. The antiquity of man in Tasmania has been the subject of consideration by many writers—reference may profitably be made, in particular, to Noetling (1911), Twelvetrees (1917), Edgeworth David (1924), Lewis (1935), Meston (1937), Wunderly (1938*b*). In culture-status, the artifacts here described are decidedly higher than those we customarily attribute to the known Tasmanian race. An attempt to assign them to an earlier race in Tasmania would necessarily be based, so far as direct and intrinsic evidence is concerned, on the circumstances of their discovery, notably the depth at which they were encountered.

*(iii) Manufacture in Tasmania by Mixed-Bloods*

It will be convenient to notice here, in a separate subsection, the possible implications regarding the problem of the ground stone implements here described arising from references by Wunderly (1938*a*, 1938*b*, 1939) to (*a*) elements of other than pure Tasmanian blood in the general Tasmanian population; (*b*) the occurrence of Australian full-bloods and Tasmanian-Australian mixed-bloods in the West Coast Tribe: some aspects of the discussion will, of course, be relevant also to subsections (*i*) and (*ii*) above.

*(a) Elements of other than pure Tasmanian blood in the general Tasmanian population.* 'There is abundant evidence in official documents and reliable histories and narratives of the fact that mating occurred between Tasmanians, on the one hand, and Europeans, Australians, Chinese, &c., on the other. As soon as seventeen years after the commencement of the European settlement of Tasmania in 1803, Australian aborigines were officially transported from the mainland to the island, according to West [1852] and others. Both during and also prior to this settlement, sealers and whalers carried Australians and individuals of other races to Tasmania, with whom the Tasmanians are known to have mated' (Wunderly, 1938*a*, p. 121). 'Written records represent many voyages of exploration to the coasts of Tasmania made between the years 1642 and 1800, by Tasman, Dufresne, Furneaux, Cook, Bligh, Cox, D'Entrecasteaux, Hayes, Flinders and Bass. Some evidence contained in narratives strongly suggests that many unrecorded voyages of adventure to Tasmania by "blackbirders", pirates, whalers, and sealers were achieved between these years, and also subsequently' (Wunderly, 1938*b*, p. 198). See also Wunderly (1939, p. 312).

In a study of osteological material in Australian collections, Wunderly (1939) deals with the 'Tasman series of skulls' comprising 106 crania (and 8 mandibles, to which no further reference is made here): excluding the now undeterminable material of Wunderly's Section H, there remain for examination 93 skulls. Of these 93 skulls, 33 are regarded as other than Tasmanian full-blood, being accounted for as follows: (B) Australian full-blood 11; (C) skull 'apparently that of an individual who had no Tasmanian or Australian ancestors' 1; (D) Tasmanian-European mixed-blood 7; (E) Australian-European mixed-blood 3; (F) Tasmanian-Australian mixed-blood 9; (G) 'apparently skulls of individuals of mixed blood with no Tasmanian or Australian ancestry' 2 skulls (total 33).

Of the 33 skulls regarded as other than pure-blood Tasmanian, it would appear that some 19 have been reported upon by previous writers, notably Harper and Clarke (1898), Berry and Robertson (1909), Smith (1916), Wood Jones and Campbell (1924), Hrdlicka (1928). Each of these 19 skulls has been accepted as Tasmanian by one or more earlier investigators: but differences of opinion occur



regarding one skull of section B and three skulls of section F (Tasmanian, Wood Jones and Campbell; of Australian type, Hrdlicka), and the two skulls of section G (Tasmanian, Berry and Robertson; half-caste, Harper and Clarke).

While it seems highly probable that some of the supposedly Tasmanian skulls in Australian collections are not those of pure-blooded Tasmanians, a proportion of more than one-third of the total number investigated seems high.<sup>(1)</sup>

(b) *Occurrence of Australian full-bloods and Tasmanian-Australian mixed-bloods in the West Coast Tribe.* Wunderly (1939) makes brief reference in the text (p. 334) to nine skulls classified as Tasmanian-Australian mixed-bloods, and includes in a table of measurements (Appendix III) the dimensions of eight of these skulls (five males, three females) under the heading 'Skulls of Tasmanian-Australian mixed-bloods found in the domain of the west coast tribe'. Of these eight skulls, five (nos 54, 65, 66, 67, 109) were found 'at the northern end of the west coast' and three others (nos 29, 30, 31) 'about 80 miles distant on north coast' (i.e., at Pardoe, near East Devonport). The history of the remaining skull (no. 71) in Wunderly's group F, noted on p. 334, the locality of which is not there mentioned, is 'found on beach at Eaglehawk Neck' (Crowther and Lord, 1921, p. 139).

In a paper on the West Coast Tribe of Tasmanian aborigines Wunderly observes 'All available evidence, therefore, suggests strongly that a number of Australian aborigines voyaged or were transported from the mainland, and eventually inhabited the west coast regions of Tasmania, where mating occurred between them and the Tasmanians' (1938a, p. 123). As regards number and time of advent, it is considered 'These facts all point to the probability that the Australian full-bloods and Tasmanian-Australian mixed-bloods constituted a minority in the West Coast Tribe. They also suggest that only a small number of Australians reached the west coast from Australia, and that they arrived probably one or two generations prior to the beginning of European settlement' (p. 123).

His conclusion regarding the presence of Australian full-bloods and Tasmanian Australian mixed-bloods in the West Coast Tribe is based on a variety of considerations. Among the points advanced are: (i) 'great height of west coast natives'; (ii) 'hostility exhibited by the West Coast tribe, in contrast to the natural docile characteristics of the Tasmanians generally'; (iii) 'Kelly's reference [1921] to these tall natives on the west coast having very long and thin arms and legs'; (iv) 'aborigines on the west coast exhibited more cicatrices on the body than those inhabiting other parts of the island' [Backhouse (1843) cited]; (v)

(1) In a note published at the end of the paper by Wunderly (1939), Morant (1939, p. 338) observes. 'One may accept his diagnosis as correct in the majority of cases, at least, and yet remember the danger that anatomical selection of a racial group may lead to a sample with unnaturally small variability. An examination of any random series of skulls which may correctly represent a specialized racial population—such as the Guanche, the Andamanese or the Greenland Eskimo—shows that a number of the individuals included may depart quite markedly from the type for the series'. Discussing the cephalic index, Morant (p. 339) observes 'The samples are too small to yield any decisive conclusions, but there is certainly a suggestion that the female distribution for Dr. Wunderly's measurements has been curtailed. The standard deviation for it is appreciably lower than that recorded for an unselected series of skulls from any part of the world'. Of the 93 determinable skulls referred to above, 90 have been sexed. The sex-distribution is as follows: pure-blood Tasmanian (58 specimens), male 53 per cent, female 47 per cent; other than pure-blood Tasmanians (32 specimens), male 41 per cent, female 59 per cent. Hence, among the pure-blood Tasmanians females are in deficit of males (by 4 skulls); among other than pure-blood Tasmanians females are in excess of males by 6 skulls, or, in other terms, there are, to within a fraction of a skull, half as many females again as males. The pooled figures for the two groups give male 49 per cent, female 51 per cent (females in excess of males by 2 skulls). The data therefore suggest the following considerations: (a) if the assumption be made that there is a good chance of approximate numerical equality of the sexes, then it would appear possible that the other than pure-blood Tasmanian category has been unduly enriched as regards females, at the expense of the pure-blood Tasmanian category; if the assumption of approximate numerical equality be rejected, no such inference can be drawn; (b) if the exceptionally low standard deviation of the cephalic index for the female series classified as Tasmanian pure-blood, to which attention has been called by Morant, is significant, it would point, but from the opposite direction, namely, an undue depletion of the Tasmanian pure-blood female category to the advantage of the other than Tasmanian pure-blood female category, to an equivalent conclusion to that suggested by an assumption of good probability of the material examined exhibiting a sex-ratio approximating unity.

superior habitations, including permanent habitations, some of which were thatched; (vi) rock carvings [Meston (1932, 1933) cited <sup>(1)</sup>]; (vii) character of stone implements [Pulleine (1929) cited]; (viii) craniological evidence.

The important bearing of the possible presence in a Tasmanian aboriginal tribe of Australian full-bloods and Tasmanian-Australian mixed-bloods on the problem presented by the ground stone implements here described is obvious. A critical examination of the evidence for and against this contention is outside the scope of the present paper: it will suffice here, first, to point out that the case advanced by Wunderly includes some errors (*e.g.*, the statement (1938*a*, p. 122) that 'the only hostile natives encountered during the voyage' of Kelly and his four companions in their circumnavigation of Tasmania in 1815 'were those on the west coast'); secondly, to observe that, to the present writer at least, some of the inferences drawn appear not to be fully warranted by the evidence adduced; and, thirdly, to refer those interested direct to the papers themselves (Wunderly, 1938*a*, 1938*b*, 1939).

### 3. IF NOT MADE IN TASMANIA, HOW DID THEY COME HERE?

Some of the more obvious methods by which the artifacts, if not manufactured here, could have reached Tasmania have already been touched upon above, either directly or by implication. The possible explanations that first naturally suggest themselves are two: (*a*) brought to Tasmania by Australians or other extra-Tasmanian natives, and lost here; (*b*) strays from European collections. One or other of the several other logically possible explanations (*e.g.*, brought back by Tasmanians who visited other countries; obtained, by barter or otherwise, by Tasmanians from non-Tasmanians visiting our shores; brought to Tasmania accidentally, without human knowledge or intention) would appear, on the face of it, to provide a less plausible, though by no means inconceivable, answer to the question.

In the foregoing brief discussion, it has been possible merely, first, to suggest some lines along which the problem presented by the ground implements here described may be approached, and, secondly, to draw attention to some relevant facts, with references to sources from which additional data may be obtained. To attempt, in so brief a compass, a comprehensive survey of all facts and possibilities bearing on the problem is clearly out of the question.

It is evident that complete homogeneity of the series (in respect of source, technique, age, distribution, material, and so on—the relative importance of these factors being perhaps roughly in the order of enumeration) would permit more readily of a single, heterogeneity more readily of a multiple, explanation.

The facts here recorded appear of considerable interest. Their interpretation may perhaps remain, at the present stage, to a greater or lesser degree conjectural.

To account for the presence in Tasmania of these specimens a variety of explanations may be suggested. Some, or all of the series may have been brought to Tasmania by pure-blood or mixed-blood Tasmanians of the historic Tasmanian race; or by a Tasmanian people, of pure or mixed blood, other than the historic Tasmanian race; or by extra-Tasmanian natives, of pure or mixed blood, visiting or resident in, Tasmania, prior to, at, or subsequent to, the beginning of European settlement; or by Europeans: may have been made, or partly made, in Tasmania by pure-blood or mixed-blood Tasmanians of the historic race, either on their own

<sup>(1)</sup> Rock-carvings have also been found by Jones (1938) on the West Coast, at Trial Harbour. In connexion with the rock-markings at Devonport, described by Meston (1932), it may be observed that the present writer (Scott, 1932) has suggested these may possibly be of natural, and not of human, origin: so far as he is aware, this suggestion has received no published support in any quarter; nor, so far as he is aware, have the reasons advanced in support of this suggestion been the subject of published critical examination.

initiative, or under the influence of an extra-Tasmanian culture, or cultures; or by a Tasmanian people, of pure or mixed blood, other than the historic Tasmanian race; or by extra-Tasmanian natives, of pure or mixed blood, visiting, or resident in, Tasmania, prior to, at, or subsequent to, the beginning of European settlement: may be accounted for, wholly, or in part, by some other explanation, or by a combination of explanations.

It is not proposed here critically to examine these possibilities, or to advocate the acceptance of any one of them: the writer, himself a native Tasmanian, has no axe to grind, not even a speculative anthropological one. The finding or obtaining in Tasmania of the ground artifacts here described appears to raise a problem of some interest: the primary object of the present paper is to record the known facts, and, in so doing, provide, it may be, material for the speculation of others.

Grateful acknowledgement is made of assistance received from several sources, thanks being tendered, in particular, to Mr D. J. Mahony, Director, National Museum, Melbourne, and to Mr Q. J. Henderson, Field Geologist, Geological Survey, Tasmania, for petrological observations; to Mr F. H. Johnson, Government Analyst, Hobart, for observations on the soil sample noted in connexion with the implement found near Wattle Corner; to Mr J. R. Forward, Librarian and Secretary, Launceston Public Library, for access to early records of that Institution; and to Miss R. A. V. McCulloch, Mr C. L. Willes, Mr F. J. Bridgborn, and Mr Norman Andrews, for data on the history of specimen kindly supplied by them.

As originally written, the preceding paragraph contained a name that may now be included only in retrospect. It is with regret I record here the death at Devonport, Tasmania, on 19th May, 1941, of HAMILTON STUART DOVE, born in England about 1864, and for a great many years one of the leading scientific workers of this State. He was a keen observer and an accomplished all-round naturalist, his special interests lying, if we may judge from the number and diversity of his published contributions in these subjects, in Ornithology and Anthropology. In the early part of the century he played an active and extensive part, as an honorary worker, in the development of this Museum, and later, during his long residence at Devonport, continued to manifest a keen and practical interest in all matters pertaining to the welfare of the institution. A man of rare and unassuming personality, he became to all who had the privilege of knowing him a valued personal friend.

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## PLATE XII

### STONE ARTIFACT OF NON-TASMANOID FACIES OBTAINED IN TASMANIA

#### SPECIMEN A

Stated to have been obtained by Dr J. Milligan from aborigines who frequented Surrey and Hampshire Hill [*sic*], North West Tasmania. Donated to Mechanics' Institute Museum in 1882; subsequently acquired by this Institution (Q.V.M. Reg. No. 1230). Length 112.8 mm. Weight 300.66 gm. Quartzite.

Fig. A.—General view of implement: reverse (see text); primary cutting edge towards bottom of plate.

Fig. B.—Section at one-fourth of length from tip (most advanced point of primary cutting edge).

Fig. C.—Section at middle of length.

Fig. D.—Section at three-fourths of length from tip.

*Orientation of Sections.*—Place implement upright on page, resting on primary cutting edge, and with reverse facing towards bottom of plate; then sections would be orientated as shown, *i.e.*, with reverse directed towards bottom of plate, left edge (see text) directed towards right margin of plate.

All figures about natural size.

(Photograph by H. J. King)





## PLATE XIII

STONE ARTIFACT OF NON-TASMANOID FACIES FOUND IN TASMANIA

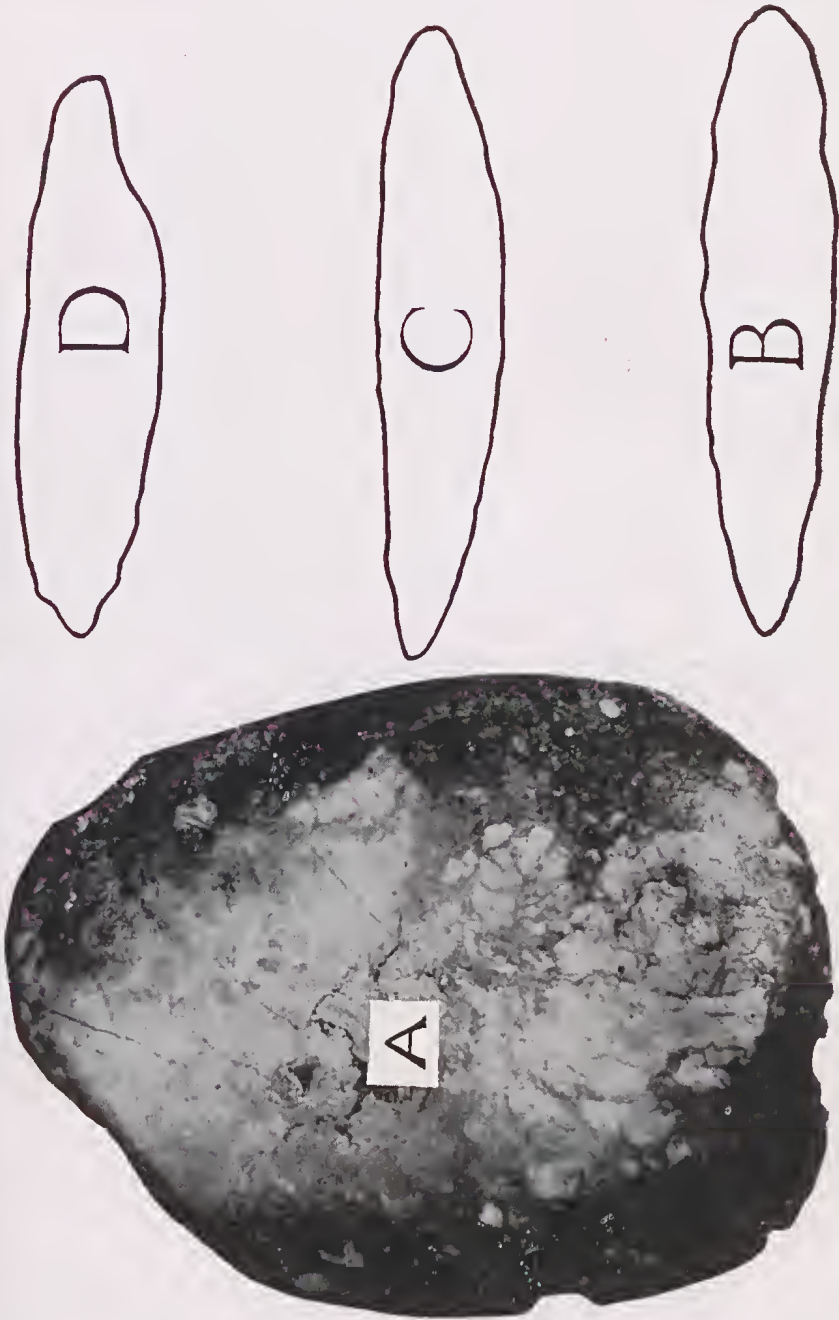
### SPECIMEN B

Found at St. Leonards, Northern Tasmania, by Mr Cuthbert Wilkinson. Donated by Miss M. Groom in 1895 (Q.V.M. Reg. No. 1258). Length 126.0 mm. Weight 434.70 gm. Gneissose gabbro-amphibolite.

Lettering and orientation of figures as in Plate XII.

All figures about nine-tenths natural size.

(Photograph by H. J. King)



## PLATE XIV

STONE ARTIFACT OF NON-TASMANOID FACIES FOUND IN TASMANIA

### SPECIMEN C

Found on eastern side of East Sandy Point, near Bridport, North Eastern Tasmania, by Mr Norman Andrews, Bridport. Lent by Mr T. A. Jessop in 1923 (Q.V.M. Reg. No. 1262). Length 151.1 mm. Weight 423.90 gm. Quartzite.

Lettering and orientation of figures as in Plate XII.

All figures about nine-tenths natural size.

(Photograph by H. J. King)



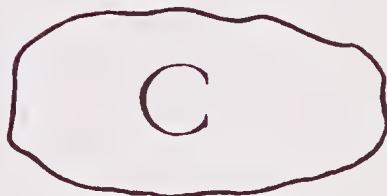
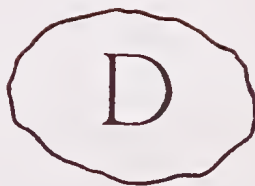


PLATE XV

STONE ARTIFACT OF NON-TASMANOID FACIES FOUND IN TASMANIA

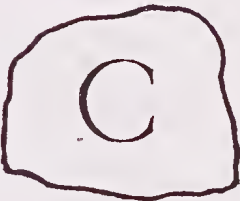
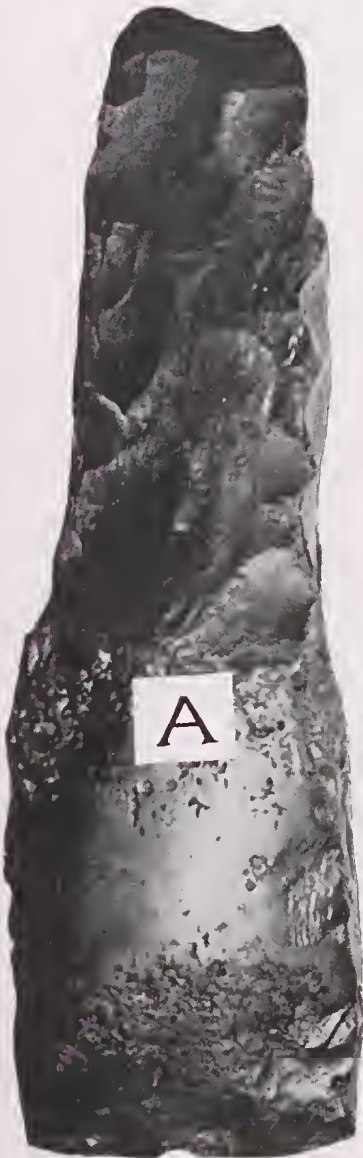
SPECIMEN D

Found near *Springlands*, near Westwood, near Hadspen, Northern Tasmania, about 1925-6. Donated by Miss R. A. V. McCulloch in 1937 (Q.V.M. Reg. No. 1937. 37). Length 145.0 mm. Weight 242.10 gm. Fine grained hornfels.

Lettering and orientation of figures as in Plate XII.

All figures about natural size.

(Photograph by H. J. King)





## PLATE XVI

STONE ARTIFACT OF NON-TASMANOID FACIES FOUND IN TASMANIA

### SPECIMEN E

Found on 15th January, 1927, by Police Sergeant E. Hainsworth in a gravel pit (the section being worked at the time was about three feet below the level of the surface) at East Devonport, North West Coast, Tasmania. Donated by Mr C. L. Willes in 1938 (Q.V.M. Reg. No. 1938. 81). Length 110.5 mm. Weight 202.66 gm. Dark green nephrite.

This specimen has been described and figured by H. D. Skinner (*Journ. Polyn. Soc.*, 45, 1936, pp. 39-42, one text-fig.).

Lettering and orientation of figures as in Plate XII.

All figures about natural size.

(Photograph by H. J. King)



## PLATE XVII

### STONE ARTIFACT OF NON-TASMANOID FACIES FOUND IN TASMANIA

#### SPECIMEN F

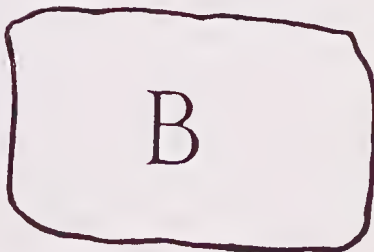
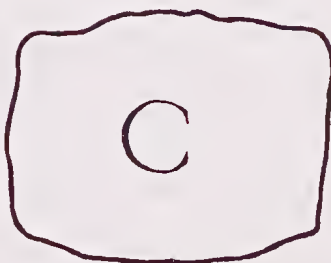
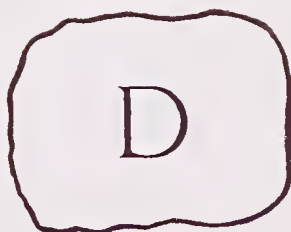
Found, *in situ*, partly imbedded in right bank of Ford River, about three feet six inches below surface, some three or four yards from the junction of the Ford River with the North Esk River, Wattle Corner, near Upper Blessington, Northern Tasmania, by Mr F. J. Bridgborn, about 1934. Donated by Mr F. J. Bridgborn in 1940 (Q.V.M. Reg. No. 1940. 330). Length 193.5 mm. Weight 738.18 gm. Fine grained hornfels.

Lettering and orientation of figures as in Plate XII.

All figures about nine-tenths natural size.

(Photograph by H. J. King)





## PLATE XVIII

STONE ARTIFACT OF NON-TASMANOID FACIES FOUND IN TASMANIA

SPECIMEN G

Ploughed up, about forty years ago, by Mr Edward Thomas on the *Northdown* farm, lying between East Devonport and Port Sorell, North West Coast, Tasmania. Lent by Mr H. Stuart Dove in 1941 (Q.V.M. Reg. No. L.I. 1941. 7). Length 102.6 mm. Weight 540.55 gm Mesozoic dolerite

The conspicuous depression visible in the photograph of the implement (Fig. A), above, and to the right of, the reference letter is due to the removal of a slice of the rock for microscopical examination.

Lettering and orientation of figures as in Plate XII.

All figures about nine-tenths natural size.

(Photograph by H. J. King)

